

# **Working Party on the Lighting of Motor Vehicles**

## **Report to the Minister of Transport on the**

### **Use of Headlamps**

#### **Introduction**

1. The purpose of this report is to summarise the Working Party's consideration of the advice it should give the Minister as to how she should exercise the powers provided her by Parliament in the Road Traffic Act 1962 to make regulations requiring drivers to use headlamps at night when their vehicle is in motion. The Highway Code for many years has advised the use of headlamps on unlighted roads and also in built up areas unless the street lighting is good. Many drivers fail to follow this advice and drive with only side lights. The view of the Working Party, and this no doubt was shared by Parliament when it decided to give the Minister these powers in 1962, is that the time has come to re-enforce the advice given by the Highway Code by regulations which should be simple to understand and easily enforceable. This report and the reservations recorded sets out the major difficulties we have had on reaching an agreement on exactly what we should recommend to the Minister.

#### **Compulsory Fitting of Headlamps**

2. The powers in the Act enable the Minister to make it compulsory for vehicles to carry headlamps and to require those headlamps to be lit during darkness. The powers are not applicable to headlamps which are now fitted to existing vehicles on a voluntary basis. The first step taken by the Working Party was therefore to consider regulations which would make the carriage of headlamps compulsory. Although most motor vehicles are fitted with headlamps there are some which are not. The owners of these will need to get headlamps fitted so the Working Party has recommended that regulations requiring the fitting of two headlamps on all motor vehicles with four or more wheels should come into effect after a suitable period in which to enable their owners to have them fitted. Subsequent regulations requiring the use of these headlamps under certain circumstances could then be made effective without delay. The Working Party has learnt with satisfaction that draft regulations requiring the fitting of headlamps have been circulated by the Minister and that she is now considering the observations made upon them by interested organisations.

#### **Different Types of Headlamps**

3. In order to enable the regulations to become effective as soon as possible, the draft regulations requiring the fitting of headlamps to existing vehicles and to new vehicles have been drawn up in such a way that they will require the minimum of alteration to existing vehicles and models. Virtually all four wheeled vehicles with two headlamps which are fitted as they left the manufacturers will conform to regulations. A few, mostly public service vehicles, have been wired so as to enable only one headlamp to be lighted. Otherwise existing headlamps will be satisfactory provided that they conform to the existing regulations that they should be so constructed fitted and maintained as not to be capable of causing dazzle at a greater distance than 25 feet at a height at not less than 3 feet 6 inches from the road. The headlamps must be mounted so that they are not lower than two feet from the ground or higher than 3 feet

6 inches. In our discussions on the use of the headlamps, there was much disagreement as to the respective merits of different sorts of headlamp and in particular of the different sorts of dipped beam that they produced. It would therefore be of use if we defined straight-away the different sorts of beam which will be mentioned.

### **Definition of Headlamp Beams**

4. *The main (driving or upper) beam.* A beam of light intended primarily for distant illumination of the road when no other vehicle is approaching. The Inland Transport Committee of the Economic Commission for Europe recommends that headlamps should be capable of adequately illuminating the road for a distance of at least a hundred metres in front of the vehicle at night in clear weather and that the total intensity of vehicles' driving lights should not exceed 300,000 candelas.

*Dipped (meeting, lower or passing) beam.* A beam of light intended for illumination of the road ahead of the vehicle when meeting other road users. Paragraph 3 sets out the restrictions which present regulations in this country impose on these beams with respect to glare or dazzle: the Inland Transport Committee of the ECE further recommends that the distance of visibility should be 30 metres.

*The European Dipped Beam.* Most European countries require by regulation that headlamps fitted to motor vehicles operating in those countries shall comply with a technical specification for what is known as the European Beam. Such headlamps may emit an assymmetric dipped beam in accordance with requirements of the ECE Regulation 1 and incorporate an incandescent filament lamp complying with ECE Regulation 2. The dipped beam has a markedly sharp cut-off just below the horizontal on the offside, but is allowed to rise above the horizontal to the nearside. It is prone to cause a flashing effect as seen by an approaching driver when the vehicle goes over irregularities in the road surface and although it illuminates the area immediately in front of the car it produces a disconcerting effect of unlit emptiness on the road ahead beyond that area.

*The Anglo-American Dipped Beam.* The Anglo-American Beam is generally used in the United States, this country, Australia and South Africa. It provides a considerably less sharp cut-off than the European Beam, and there is therefore less contrast between the driving beam and the dipped beam. It is claimed to be superior on the open road and easier to aim than the European Beam whereas the latter is claimed to be better elsewhere.

*The Dim/Dip Beam.* The Dim/Dip system is a modification to existing headlights which was recently designed by the Road Research Laboratory to make it easier in well lit streets for other road users to become aware of the presence and approach of a vehicle using the system than would be the case if the vehicle were showing only side lamps, but without causing glare. When the ignition and side lamps are both switched on the dipped headlamps light up to about 1/10—1/5 of their normal intensity, to act as large marker lamps. Use of this system also reveals the presence of the vehicle to other road users in poorly lit streets, but it is not appropriate because the dimmed beam does not enable the driver to see far ahead. Use of this system therefore makes it necessary for the driver to decide whether to change the headlamp switching when passing from a street with one standard of street lighting to a street with a different standard.

The equipment to convert existing vehicles costs about 30/0d, but the cost of

incorporating the system in new vehicles would be a fraction of this outlay. *Halogen Lamps.* These are a new development in headlamp design. They make use of special bulbs filled with bromine or iodine vapour and their light output is claimed to be about 70% greater than conventional filament lamps for the same current consumption. They have not yet been generally introduced for anything but the main beam of headlamps but they do present a potential problem in that they will accentuate the contrast between the full beam and the dipped beam and this may cause dangerous conditions on the open road when drivers have to dip their lamps suddenly.

#### **Compulsory Use of Headlamps: Main Beam.**

5. There has been much discussion in this Country and in the Working Party on when it should not be obligatory to use a dipped beam but there has been little or no discussion on when or why the full main beam should be used. This is probably because it is taken for granted that drivers will use their headlamps if they cannot see properly. The Working Party is not convinced that they will always do so and would commend to the Minister the recommendation of the European Conference of Ministers of Transport that either the main beam or the dipped beam should be switched on at night and that drivers should use the main beam whenever their field of vision is insufficient to give complete safety having regard to the speed at which they are travelling. The Working Party recommend that the Minister should consider including some such positive requirement for the use of the main beam in any regulation on the use of headlamps that she may make. The Working Party does not think that it is necessary to justify this recommendation by any detailed argument or statistical proof: it is self-evident that a driver should see ahead and should drive at a speed which will enable him to stop safely within his seeing distance. If the use of the main beam would dazzle other drivers or himself in conditions of fog he should dip his lights and adjust his speed accordingly. The difficulty in this country is that in spite of the Highway Code too many drivers still seem to think that they can see adequately when driving on their side lamps on badly lighted or even unlighted roads and the Working Party considers that the immediate problem in this country is how to ensure greater use of the dipped beam. This report therefore concentrates on the compulsory use of the dipped beam and the various advantages of the three forms of dipped beam mentioned in paragraph 4 namely the Anglo-American Beam, the European Beam, or the Dim/Dip Beam.

#### **Use of Supplementary Front Lamps**

6. But in conditions of fog or falling snow fog lamps may be preferable to normal headlamps whether on dipped or main beam. The Working Party considers that in such conditions two fog lamps should be permitted instead of the headlamps. In spite of the value of only one fog lamp to the driver in fog or falling snow the majority of the Working Party considered that one light was so dangerous to oncoming drivers who might confuse the vehicle for a motor cycle, that they recommend that the use of one fog lamp alone should not be permitted. However, while preferring an even number of lights at the front of a vehicle, they would recommend the Minister to permit one fog lamp to supplement the two headlamps in conditions of fog or falling snow provided it is only used either with the dipped headlamps, dim/dip beams or with an auxiliary lamp symmetrically positioned. Any other lamps, e.g. a long range lamp, used to supplement the obligatory headlamps should be so wired that

they are extinguished automatically with the main beam. They should preferably be of even number.

### **Relative Merits of Anglo-American and European Dipped Beams**

7. Discussion about the use of dipped beams in this country, is normally in terms of the Anglo-American Beam because that is the type of beam with which most drivers have had experience. However many people when they have returned from a holiday in Europe are very impressed by what they consider to be the European Beam. This may be due to the fact that in France headlamp beams are yellow and their intensity compared with British beams is less. It may also be due to the fact that the British drivers are usually on the nearside of the road and therefore further away from the headlamp beams of an approaching car than they are when driving in their own country. The Working Party has had many discussions about the relative merits of the European and the Anglo-American Beams, and saw a demonstration of different types of beam at the Road Research Laboratory but has not been able to come to any agreed decision. On the open road the prevalent view was that the Anglo-American Beam was generally preferable, as its aiming is less critical and the contrast between the main beam (especially a halogen beam) and the dipped beam is less marked. On lighted streets opinion was much more divided. The Road Research Laboratory considered that their experiments had shown that the European Beam caused less dazzle than the Anglo-American Beam; also that in well-lighted streets the European Beam enabled stationary objects in the middle of the carriageway to be seen better than did the Anglo-American dipped beam. Many of the Working Party however considered that the benefits of one form of dipped beam over the other were not sufficiently marked to enable any clear decision to be reached as to which was the better in all circumstances.

### **Objections to the Use of Dipped Headlamps**

8. Undoubtedly the main objection to the compulsory use of dipped headlamps from the point of view of public opinion generally is that in certain circumstances they can cause glare in spite of the regulations against dazzle. We consider that the anti-dazzle regulations should be looked at again to see whether any immediate improvement can be obtained in this matter and also that there should be an intensified drive under the vehicle testing scheme and by the enforcement agencies generally to improve the standard of maintenance of headlamps so as to minimise the general objections to dipped headlamps. But we do recognise that however well aimed dipped headlamps may be, a long line of cars with dipped headlamps coming towards a driver is bound to cause glare and thereby discomfort. This glare is worsened on well polished black top roads and especially when it has been raining. When headlamps are used in a well lighted street with bright shop windows one or two may not cause much difference in the total amount of glare but large numbers would undoubtedly do so. While drivers are willing to put up with the discomfort caused by glare on badly lighted streets, especially if there are not many oncoming vehicles, they see little reason in putting up with it on well lighted streets.

We think that this feeling will persist whatever type of headlamp beam is used. This is because much of the glare is reflected off the road surface up into the eyes of the driver and in fact very few drivers would be able to tell on encountering a beam whether it was a European Beam or an Anglo-American

Beam. This is exemplified in Belgium where both types of beam are in general use without comment.

### **Objections to the Use of Dipped Beams in Well Lighted Streets**

9. Apart from the general objection to the use of dipped headlamps mentioned in the previous paragraph, there is the more sophisticated objection to their use in well lighted streets. This objection is that the use of headlamps in well lighted streets would impair the value of the street lighting. This is because modern street lighting is based upon lighting the carriageway and the background so that vertical objects (e.g. pedestrians) on the road ahead show up in black silhouette against the lighted road surface. A vehicle's headlamp by lighting the object reduces this contrast. This cogent objection can be demonstrated on a stationary object and is confirmed by the experience of police on traffic duty who feel they are in greater danger because motorists will not see them. There is no evidence however in respect of moving objects. Moreover it would not apply to the upper parts of objects (i.e. over 3 ft. 6 inches high) at more than about 25 feet from the vehicle which would not be illuminated to any great extent by the dipped beam.

10. The Working Party has come to the conclusion therefore that in any discussion on the merits of using dipped headlamps or not, we must ignore the marginal differences between the Anglo-American Beam and the European Beam because they are small compared with the total effect of a dipped beam. This does not mean to say that the Working Party is satisfied from the information now available that either the Anglo-American Beam or the European Beam is preferable in all circumstances. The Working Party considers that further work should be done on this with particular reference to (a) visibility at dusk and dawn, (b) visibility on unlit and badly lit roads with strings of traffic particularly on rural roads, (c) the effect of flashing by the European Beam, (d) the relative effects of the two beams on moderately lighted roads and (e) the relative effects of the two beams for picking out moving objects on well lighted roads. From these experiments it might be possible to evolve a new beam which would avoid the objections of both the existing types. But this is a long way off and as the Working Party sees the problem, it is to decide what advice to give to the Minister now about the use of headlamps now in use which are almost universally of the Anglo-American type. In coming to this conclusion we have borne in mind that the extra cost for a change in three years to another type of headlamp beam might according to the Road Research Laboratory be anything from £7m. to £15m. with an extra annual cost for a more gradual change of about £4m. to £8m. We should have to be very sure of a considerable benefit from the European Beam over the existing Anglo-American Beam to make a recommendation imposing costs upon the community of that order.

11. *The dim/dip system.* The objections to the use of dipped beams on well lighted roads led the Road Research Laboratory to devise the dim/dip system of lighting. They had in mind that it is not only important for the driver of a vehicle to see obstacles, but equally important for pedestrians and other road users to become aware of the presence of a moving vehicle. The use of side lamps alone does not distinguish a stationary vehicle from a moving vehicle and with the many different intensities and sizes of side lamps in existence pedestrians frequently do not realise that a vehicle is approaching them and even more frequently misjudge its distance and speed of approach. If vehicles had to have their dipped headlamps on when moving at night it would be

obvious to pedestrians that a vehicle was approaching, and the size of the headlamps would make it easier for them to appreciate its speed of approach. The dim/dip system uses this idea but instead of the dipped headlamp being used at its full power, a simple device is inserted in the circuit which reduces the power of the normal beam so that it is not bright enough to interfere with the effectiveness of the street lighting and cannot cause glare. Other road users however, looking at the vehicle using this beam see its headlamps as two illuminated discs much larger than side lights. It should therefore be a most effective light for using in well lit streets. The dim/dip beam has been tested by a number of road safety organisations throughout the country and most have expressed themselves as firmly in favour of it. A controlled experiment with 1700 GPO vehicles of which half are fitted with this beam is now going on, but is not likely to produce results for a further year, and these results are unlikely to be conclusive. The Working Party however, saw a demonstration of its use at the Road Research Laboratory at Crowthorne and were impressed by it. The beam does not provide enough light to enable the driver to see objects on the road, at any distance ahead so he needs to switch on his headlamps at normal strength before entering a street which is not provided with a good standard of street lighting. If he does not do this and relies upon his dim/dip headlamp beams although pedestrians will have the benefit of seeing the lamps (but this will not be as effective as the full dipped beam of a normal headlamp in such circumstances), the use of this beam might cause danger although to a lesser degree than results from the practice of using only side lights in such streets.

12. *Arguments in favour of the use of Dipped Headlamps.* A number of different proposals for the compulsory use of dipped headlamps have been made by various bodies concerned with road safety. The Working Party has studied a range of documents including in particular, a paper prepared by the Ministry of Transport (LWP. (65)4), reports prepared by the Road Research Laboratory assessing the results of the Birmingham dipped headlight campaigns during the winters of 1962/63 and of 1963/64, a recommended code of lighting practice prepared by the Society of Motor Manufacturers and Traders and road traffic rules approved by the European Conference of Ministers of Transport. The membership of the Working Party itself affords a wealth of experience in the fields of the design, manufacture and use of motor vehicles and their lighting equipment and includes lighting experts with wide personal experience of various types of lighting equipment and rules for its use in overseas countries. From this information and from our experience, we are unanimous in believing that it would be desirable to put into effect regulations enforcing the Highway Code that on unlighted roads headlamps should always be used, that they should be dipped when other vehicles or cyclists are met, or when driving behind another vehicle and that they should be used dipped in built-up areas unless the street lighting is good. The problem however is to draft regulations that will be generally acceptable to drivers in this country and therefore enforceable by the police.

### **The Use of Headlamps in Foreign Countries**

13. The European Conference of Ministers of Transport (with the United Kingdom Minister abstaining) have recommended that either the main beam or the dipped beams of headlamps should be switched on where a vehicle is moving at night, the main beam to be used whenever the field of vision is insufficient to give complete safety otherwise the dipped beam except when the

vehicle is in an adequately lit built-up area where side lamps alone are sufficient. The dipped beam may be used instead of the main beam in adequately lit built-up areas, outside built-up areas where the carriageway is continuously lit, when the vehicle is about to meet another vehicle or when a vehicle is following close behind another except when overtaking. These recommendations, which the European community hope to enforce as obligatory regulations, are generally in conformity with existing practice on the Continent. France follows a different pattern in that at the moment she leaves local authorities to decide whether headlamps shall or shall not be used where there is street lighting. In the rest of the world the use of headlamps at all times is normal in the United States, the rest of North America, all the countries of South America as well as South Africa, Australia and the Far East (most of these countries use the Anglo-American type beam). Apart from recent enquiries in Australia, we have no information which suggests that there has been any general criticism of the compulsory use of headlamps, dipped where necessary, in these countries. This applies to badly lighted as well as well lighted streets. It should be remembered that although the standards of street lighting in the U.K. vary considerably, the proportion of that lighting which is of a high standard may well be much greater than in the countries mentioned above. But it would be erroneous to consider that this country has a monopoly of excellent lighting. It would seem therefore that if we are to go by other countries' experience, we should make the use of dipped headlamps compulsory during the hours of darkness on all moving vehicles.

14. But foreign practice though persuasive is not conclusive. We have examined what statistical evidence there is available to see whether it gives any guidance. Much work has been done in connection with the Birmingham dipped headlamp campaigns. We have studied the two reports made by the Road Research Laboratory and the reports made by the Birmingham Dipped Headlights Campaign Committee. Unfortunately the evidence is not conclusive and has been used to justify opposite conclusions. There is convincing statistical evidence that use of dipped headlamps does reduce accidents on badly lighted or unlighted roads. This is not surprising. There is conflict however as to whether the evidence shows that dipped headlamps might increase the number of accidents in well lighted streets. Although the accident figures for Birmingham are remarkable, they are not inconsistent with the possibility that dipped headlamps might have increased the number of accidents in well lighted streets. We cannot however place much reliance upon the statistical information. Nor do we think that it would be possible to arrange for a small scale statistical experiment which could give us any satisfactory guidance. Any recommendations therefore that we can make must be based upon our general experience and the fact that most vehicles circulating in the world at the moment use their dipped headlamps at night and that, apart from one paper which raises doubts about this in Australia, there have been few suggestions elsewhere than in this country and parts of Europe that the policy is dangerous.

15. However, in spite of the absence of statistical information, and in spite of practice abroad, the Working Party would have liked to make a recommendation that regulations should be made so as to go no further than give force to the advice in the Highway Code. The Working Party has however considered the evidence of the Ministry of Transport concerning the difficulty of defining for regulatory purposes what is or is not a well lighted street. Not only are there

regulatory difficulties in defining such a street legally, there is also the practical difficulty of deciding whether or not any particular street is adequately lighted. We came to the conclusion that unless streets or lamp posts were clearly marked to show that headlamps were not required this could not be left to the driver or the police to decide in each particular case. This would not be impossible and we understand that such a system does in fact operate in the Netherlands. There would however be difficulties of enforcement, and we were impressed by what the police members of the Working Party said about this. We were also impressed by the cost of marking lamp posts which was estimated by the Road Research Laboratory to be in the neighbourhood of £1m. In the absence of any statistically significant evidence to show that the use of dipped headlamps in well lighted streets was an accident hazard, we do not feel that we should be justified at the moment in recommending to the Minister that she should make regulations requiring the use of dipped headlamps in all but well lighted streets which are suitably marked as such. We accept, however, that in certain streets where the lighting is so good, e.g. in parts of the West End of London, it would be quite unreasonable to require the use of headlamps and we would recommend that if any general regulation be made about the use of headlamps special exemption should apply to such streets.

16. We have come to the conclusion that on the evidence at present available to us it would be preferable to recommend to the Minister that she take steps to cause moving vehicles to use headlamps during the hours of darkness, except in certain well defined streets, the main beam being used in open country and the dipped beam elsewhere or where the main beam is likely to cause annoyance. In making this recommendation we are aware that it will arouse resentment among some road users because there will be some general increase in glare. But overall we believe that the benefits will outweigh any disadvantages. We think that the certain well defined exceptions could be secured by permitting the highway authority (with the permission of the Minister of Transport) in a strictly limited number of places to mark roads where headlamps need not be used. We should recommend permitting the use of the dim/dip headlamp beam in place of the normal dipped beam at the discretion of the driver in any built up area with street lighting where the speed limit is 30 m.p.h. or less whether specially marked or not.

17. Permitting the highway authority to exempt exceptionally well lighted streets from the application of the regulation would be in line more or less with French and Dutch practice. We should expect the Road Research Laboratory to carry out exhaustive studies on the whole effect of the regulation so that it would be possible in due course to see whether or not the designating of "headlamp free" streets was a wise thing which should be extended further or whether it should be discouraged.

18. Permitting use of the dim/dip headlamp beam instead of the normal dipped beam might be considered inconsistent with the rest of our proposals. This is true insofar that it will to a certain extent leave it to the discretion of drivers using the dim/dip system as to when they should change to the full dipped beam. There are not at the moment very many cars fitted with this system so the comparatively small numbers are not likely to affect the overall results of the change. The experiment will we believe be sufficiently valuable to be worthwhile continuing so that experience derived from it can be taken into account in the longer term review of the different sorts of beams which we have recommended above.

## 19. Problems of Enforcement

In our discussions, we have been much influenced by the views of the police members of the Working Party about the problems of enforcing any new regulation. Unless a regulation is acceptable to the public as generally reasonable, enforcement will be difficult, e.g. the compulsory use of dipped headlamps in Piccadilly.

There is general support among the police for the compulsory use of headlamps so as to show not less than the dim/dip beam whenever a vehicle is moving during darkness on any road or street. A number of police forces have had experience of the dim/dip system and they liked what they saw. Some chief officers hold the view that the most important contribution that a regulation on the use of headlamps will make is that it will help pedestrians to see moving vehicles, and these officers would sooner have a regulation requiring dipped headlamps than no regulation at all. It is fair comment to say, however, that their support is for the best immediate compromise and that they would like it to be associated with longer term requirements making the installation of dim/dip systems and headlights with sharper cut-off beams compulsory on all new vehicles. The Metropolitan Police who have one of the largest problems are strongly opposed to a regulation that would make the use of headlamps compulsory at all times after dark, unless the fitting of a dim/dip device is also made compulsory. On the present evidence most police forces seem to support their view. The police also think that glare from dipped headlamps might amount to a major hazard on a busy two way street particularly on a wet evening during the rush hour.

## An Ideal Front Lighting System

20. Examination of the advantages and disadvantages of possible available solutions that have been considered by the Working Party has led us to the conclusion that the various purposes which the front lighting of motor vehicles are needed to serve might best be met by a more complicated system than any now in use. Such a system might comprise:

- (a) Side lights suitable for use when parked.
- (b) City moving lights with beams bright enough to illuminate the street for far enough ahead for the speed appropriate to city streets and without causing glare.
- (c) Headlights with meeting beams capable of illuminating the road far enough ahead for the higher speeds appropriate to de-restricted roads carrying heavy traffic but without causing excessive glare to drivers travelling in the opposite direction.
- (d) Headlights with driving beams which are capable of lighting the road far enough ahead for comparatively high speeds and which would be turned off on the close approach of drivers travelling in the opposite direction.

Evidence of continuing development is provided by reports from America of experimental use of the "turnpike" beam intended to replace the normal meeting beams and to provide adequate vision without glare at intermediate range when travelling at speed. At the present stage of development the Working Party considers it is important that introduction of any compulsory scheme for the use of headlamps should not be in terms which might prevent further progress in the front lighting of motor vehicles.

## Conclusions

21. The Working Party recommends that:

- A. 1. Every vehicle fitted with headlamps shall use them as indicated below when on the move during the hours of darkness. (paragraph 5).
  - 2. The beam used shall be such as to ensure that the driver has adequate visibility, taking into account any street lighting provided, his speed, and prevailing conditions. (paragraph 5).
  - 3. The main beam shall not be used
    - (i) when the vehicle is about to meet an oncoming vehicle in circumstances in which the main beam may cause dazzle, or
    - (ii) when the vehicle is close behind another vehicle. (paragraph 12). (This prohibition on the use of the main beam does not apply to its use as an indication of presence or when actually overtaking).
- 4. The dipped beam shall be used in the conditions specified in 3 and may be used elsewhere except that:
  - (i) in a built up area with street lighting and a speed limit of 30 m.p.h. or less a dim/dip beam may be used instead;
  - (ii) when a vehicle is moving slowly close behind another vehicle the dim/dip beam may be used instead;
  - (iii) where a street is specially marked by the highway authority with the consent of the Minister, either dim/dip and normal sidelamps or normal sidelamps alone may be used. (paragraph 16).
- 5. When the dipped beam must be used i.e. under 3 it shall not be supplemented by front lamps, other than the obligatory side lamps, except that in conditions of fog or falling snow
  - (i) the dipped beams may be replaced by the beams from two fog lamps or one fog lamp and an auxiliary lamp mounted symmetrically at the same height or
  - (ii) the dipped or dim/dip beams may be augmented by the beam from one or two fog or auxiliary lamps mounted at the same height as each other. (paragraph 6).
- 6. When the main beam is supplemented by the beams of auxiliary lamps other than fog lamps they must be extinguished automatically with the main beam. (paragraph 6).
- B. That the Road Research Laboratory should undertake a special study of the before and after affects of introducing these measures. (paragraph 17).
- C. That the existing regulations regarding the dipping of headlamps and the avoidance of dazzle be looked at as a matter of urgency to see whether they can be modified in such a way as to reduce glare. (paragraph 8).
- D. That particular attention should be given to the maintenance of headlamps in the annual vehicle tests for private cars and goods vehicles and that the Minister should undertake a campaign to promote the improvement of the maintenance of headlamps generally. (paragraph 8).
- E. That further research should be undertaken with a view to evolving a more satisfactory beam or lighting system which might in due course become obligatory for new vehicles.

## Reservations

22. On final consideration of this report the following reservations were recorded:

### The Home Office and Police

The representatives of the Home Office and Police regret that they are unable to subscribe to the recommendation in this report on the use of headlamps in the terms in which it stands at present, as they believe that the universal use of headlamps with either dipped or main beam would create dangerous conditions of glare in busy streets, particularly for police officers on point duty in wet weather.

The police do not consider that the proposed system of exemption for a strictly limited number of streets would effectively improve the position, as, even after exemption regulations and schedules of exempted streets had been drawn up and signs had been erected, an unsatisfactory situation would still prevail. The switching of headlamps on and off would not be automatic, with the result that enforcement difficulties would arise. The great majority of brightly lit streets would not be covered by the exemptions; and a Regulation which in effect made the use of main or dipped beam headlamps compulsory in such streets would be contrary to the opinion of most motorists, is not supported by evidence, and would be difficult to enforce; if the Regulation were observed it would be as likely to increase accidents as to reduce them.

The compulsory fitting and use of the dim/dip beam would avoid the danger referred to above, would simplify enforcement and would avoid grounds for dispute as under this system the headlamps light up automatically when the vehicle's engine is switched on while the side lights are lit. As stated in paragraph 19 of this report the police favour regulations making the use of headlamps compulsory whenever a vehicle is moving during the hours of darkness provided that the fitting of the dim/dip headlamps system is also made compulsory at the same time.

### RTA

The Association makes a strong reservation against the recommendation that vehicles which are not fitted with two fog lamps should be required to use their headlamps during fog. Such use of headlamps is a hindrance rather than an aid. Very few commercial vehicles now have two fog lamps and the alternatives of fitting a second lamp or a dim/dip device would be extremely costly. Two fog or spot lamps are better than one and new vehicles will no doubt be fitted with two but the Association asks that the use of a single fog or spot lamp in fog or falling snow should not be prohibited. The Association also has reservations as to the adequacy of existing electrical generators to balance the increased loads likely to result from greater use of headlamps.

The Association also considers that any experiment involving the compulsory use of dipped headlamps should initially be for a three or four month period in mid winter. In the absence of concrete evidence to prove the road safety benefits of dipped headlamps the Association is firmly opposed to any more permanent arrangement at this stage and considers that any decision about the extension of the requirement ought to be based on statistical evidence resulting from the experiment including analysis of the views of a wide cross section of private and professional drivers.

#### **A.A.**

The A.A. agrees with the recommendation that it would be desirable to put into effect regulations that headlamps should always be used by moving vehicles (after dark or in conditions of poor visibility) unless there is street lighting of a good standard. The Association is however of the opinion that it would be premature to make this a legal requirement until the practical difficulties of marking exempted roads have been satisfactorily resolved. In the meantime it is suggested that there should be an intensive national propaganda campaign to persuade drivers always to use headlamps after dark except where there is good street lighting. Advice could be given on how the required standard may be recognised. Attention might also be drawn to the merits of the dim/dip system.

#### **R.A.C.**

Whilst acknowledging the need to secure greater compliance with the advice in the Highway Code, the RAC do not consider that the use of headlamps at all times should be a legal requirement. They contend that there would be serious problems relating to the enforcement of such regulations (which would be considered by many drivers to be objectionable because unnecessary glare would be caused in many circumstances), and that any arrangements to make regulations inapplicable to certain streets would be complicated, expensive and involve many practical difficulties which would make such a system ineffective. The RAC like the AA advocate that instead of making regulations to deal with this problem there should be an intensive propaganda campaign to persuade drivers to use headlamps in built-up areas except where street lighting is good and to encourage the further development of the dim/dip beam.

The RAC also indicate they have some sympathy with the observations made by the TRTA and the PSV operators about the proposal to make illegal the fitting of a single fog lamp. They recognise the desirability of fitting two fog lamps but consider it possible that such a regulation might discourage some vehicle owners from fitting fog lamps. They therefore, consider that the implications of this proposal may require further study.

#### **PSV Operators**

The PSV operators whilst agreeing with the advice given in the Highway Code about using dipped headlamps in built-up areas unless the street lighting is good are not convinced that the obligatory requirements envisaged are either necessary or desirable.

The PSV operators consider that the requirements suggested are of such a complicated nature that the public would be unable to assimilate them and the police would be unable to enforce them. They feel that the result of the obligatory use of headlamps, rather than being increased safety may well be increased danger for the reasons outlined in the Report.

Insofar as current public service vehicles are concerned, the operators state that the generating and battery capacity of such vehicles fitted with D.C. equipment would be insufficient in view of the heavy lighting and other loads carried, to cope with the additional load of dipped headlamps in slow moving town traffic during the long winter periods of morning and evening darkness.

The PSV operators also consider that the suggestion that main beams should be permitted when a vehicle is close behind another vehicle "as an indication of presence" might well lead to the rerudescence of "flashing" which was prevalent some years ago and to this extent they do not think the suggestion is a good one.

Finally PSV operators do not agree that the use of one fog lamp in conjunction only with obligatory side lights has ever been a safety hazard or is ever likely to be and they are therefore opposed to the suggestion either that two fog lamps only may be used or that one fog lamp in conjunction with dipped headlamps should be used. The latter they consider worse than useless and indeed dangerous insofar as in conditions of fog the back glare from dipped headlamps would destroy the value of the fog lamp.

#### RRL

The RRL draw attention to paragraph 4(i) of the Conclusions (paragraph 21) which allows a driver to choose a dim/dip beam in a built-up area with street lighting and a speed limit of 30 m.p.h. or less. They assert that when dim/dip was proposed by the Laboratory it was made clear that it was primarily to assist other road users to recognise a moving vehicle and not to illuminate the road. Hence it is intended for use in good street lighting. They point out that there are many built-up areas with 30 m.p.h. speed limits or less where the street lighting is poor (housing estates for example) and where a driver should use his dipped beam to see the road properly. To ensure that reference is to areas of good street lighting only the RRL have therefore recommended that the paragraph be altered so as to restrict use of the dim/dip beam to "primary routes and motorways with street lighting". They point out that both these classes of road have been designated by the Minister of Transport and the Secretary of State for Scotland so there should be no legal objections to the definition. The lighting on them is now a Ministry of Transport responsibility which gives reason to hope that in a few years street lighting will invariably be of a high quality. The RRL explain that from the driver's point of view he will be able to recognise the roads quite easily by the fact that they have either green or blue background direction signs.

The RRL point out that these roads comprise the trunk roads and many class I roads which carry a large proportion of the traffic of the country. They consider that the definition they propose seems to get over many of the objections raised previously over the definition of "good street lighting".

MINISTRY OF TRANSPORT

# The use of Headlamps

Working Party on the Lighting of Motor Vehicles.  
Report to the Minister of Transport.



HER MAJESTY'S STATIONERY OFFICE  
1967

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Mr. C. G. R. Benbow (Austin Motor Car Co.)	
Mr. D. Cawardine (Vauxhall Motors Ltd.)	
Dr. J. H. Nelson (Joseph Lucas Ltd.)	} Society of Motor Manufacturers and Traders
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Mr. K. J. Jones (Joseph Lucas Ltd.)	
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Mr. M. Miller (H. Miller & Co. Ltd.)	} British Cycle and Motor Cycle Industries Association Ltd.
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Mr. J. Greenhalgh (British Road Services)	} Road Haulage Association
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Mr. K. Shave (London Transport Board)	} Public Transport Association
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